



PUBLIC NOTICE

Federal Communications Commission
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THE FCC'S ADVISORY COMMITTEE FOR THE 2003 WORLD RADIOCOMMUNICATION CONFERENCE APPROVES DRAFT PROPOSAL

On April 4, 2002, the World Radiocommunication Conference Advisory Committee (WRC-03 Advisory Committee) adopted a recommendation to the Commission on an issue that the 2003 World Radiocommunication Conference (WRC-03) will address. The WRC-03 Advisory Committee was established by the Commission in January 2001 to assist it in the development of proposals for WRC-03. To that end, the WRC-03 Advisory Committee has forwarded the recommendations it has developed since the beginning of 2001 to the Commission for consideration. We have attached to this Public Notice the WRC-03 Advisory Committee's recommendation, which is in the form of recommended draft proposal to the WRC-03. We appreciate the substantial amount of work that the WRC-03 Advisory Committee has put into developing its recommendation. This Public Notice requests comments on this recommendation.

Based upon our initial review of the recommendation forwarded to the Commission, the International Bureau, in coordination with other Commission Bureaus and Offices, tentatively concludes that we can generally support the proposal recommended by the WRC-03 Advisory Committee. We seek comment on this recommendation that appears in the WRC-03 Advisory Committee document and on our tentative conclusion.

In addition, the National Telecommunications and Information Administration (NTIA) has submitted letters to the Commission containing draft proposals that have been developed by the Executive Branch Agencies. We also request comment on these draft proposals, which are attached hereto as well.

The FCC will consider the draft proposals and comments provided in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. proposals to WRC-03. Once agreed by these agencies of the U.S. Government, proposals will be used by U.S. delegations at bilateral, regional and international meetings. The draft proposals attached to this Public Notice may evolve as we approach WRC-03 and during the course of interagency discussions. Therefore, they do not constitute the final national position on these issues.

The complete texts of these draft proposals are also available in the FCC's Information Reference Center, Room CY-A257, 445 12th Street, SW, Washington, DC 20554 and by accessing the FCC's WRC-03 world wide web site at <http://www.fcc.gov/wrc-03>. To comment on the proposals, please submit an original and one copy of your comments to the Office of the Secretary, Federal Communications Commission, 445 12th Street, SW, Washington, DC 20554 and provide a courtesy copy to Alex Roytblat, FCC WRC-03 Director, Room 6-B505. When possible, these comments should also be forwarded to the Commission via the Internet at: wrc03@fcc.gov. Comments should refer to specific proposals by document number. The deadline for comments on the draft proposals and NTIA letters is **May 10, 2002**.

I. Informal Working Group 6: Public Protection and Other Issues

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/100(04.04.02)

(Originated by NTIA and approved by Informal Working Group 6)

WRC-2003 Agenda Item 1.2: *to review and take action, as required, on No. S5.134 and related Resolutions 517 (Rev. WRC-97) and 537 (WRC-97) and Recommendations 515 (Rev. WRC-97), 517 (HFBC-87), 519 (WARC-92) and Appendix S11, in light of the studies and actions set out therein, having particular regard to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service;*

ISSUE: Introduction of digital sound broadcasting below 30 MHz

Background Information: This agenda item is directed towards the operational use of digital modulation techniques for broadcasting in the HF bands. There has been sufficient progress in ITU-R SG 6, so that the digital modulation techniques to be considered under this agenda item are limited to just the digital modulation techniques recommended in Recommendation ITU-R **BS.1514**. WRC-2003 will therefore be fully competent to set any necessary conditions for introducing these digitally modulated emissions to the HF bands allocated to broadcasting.

The collection of all the articles, resolutions and recommendations listed in the agenda item text are the ones that will need to be reviewed for suppression or modification in the light of the progress that has been made in the intervening years for digital modulation use in the HF broadcasting bands. To complete the overall need, some additions will have to be made. The suppressions, modifications and additions that are incorporated in the U.S. proposal form an integrated package that deals in an efficient manner with all the aspects of the consequent needs connected with this non-allocation agenda item. By and large, the specific wording of these suggested changes are those that were developed within the ITU-R's Study Group 6 at its WP6E meetings during 2001.

Recommendation ITU-R **BS.1514**, mentioned above, is a system recommendation, wherein the acceptable digital modulation techniques are recorded. The development and testing of this modulation, including its various "modes" associated with different levels of robustness and audio quality, has brought the techniques close to consumer product status. It is expected that by the end of 2003, or not long thereafter, there will be on the market receivers that include a HF digital capability. In addition, modern HF transmitters can accept these digital signal inputs.

It is because of this progress that this agenda item and this proposal exist -- and, without diminishing broadcaster and listener access to traditional amplitude modulation, simply permits digital modulation in the mix of acceptable and available listening.

Furthermore, since the introduction of digital modulation for operational use is two years or so from 2002, the proposed modifications to existing articles, resolutions and recommendations treat all HF broadcasting bands on an equal footing. There is no longer any compelling reason to separate the conditions of use of the "WARC-92" bands from the other HF broadcasting bands. The solution

proposed is to modify Article footnote **S5.134** so that any ITU-R approved amplitude modulation or digital modulation can be broadcast in the “WARC-92” bands after 1 April 2007. Before that time, the proposal is not to permit broadcasting in these bands, other than on a non-harmful interference basis (as is the current situation using **S4.4**).

Three resolutions and recommendations are proposed to be suppressed since they are no longer relevant. They are noted at the end of the proposal, with appropriate reasons.

Proposals:

USA/ /1
MOD

RESOLUTION 517 (Rev.WRC-03) ~~(Rev.WRC-97)~~

Introduction of digitally modulated and single-sideband emissions ~~Transition from double-sideband to single-sideband or other spectrum-efficient modulation techniques in the high-frequency bands between 5 900 KHz and 26 100 KHz allocated to the broadcasting service~~

The World Radiocommunication Conference (Caracas, ~~1997~~2003),

considering

a) ~~that digital techniques are being introduced into many existing services~~ the high-frequency (HF) bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz are severely congested;

b) that digital and single-sideband (SSB) techniques allow more ~~efficient~~ effective utilization of the frequency spectrum than double-sideband (DSB) techniques;

c) that digital and SSB techniques enable reception quality to be improved;

~~*d)* that Recommendation 515 (Rev.WRC-97) encourages the accelerated design and manufacture of SSB transmitters and receivers;~~

~~*ed)*~~ Appendix S11 concerning the Digital and SSB system specifications in the HF broadcasting services;

~~*f)* that rapid developments are taking place in digital sound broadcasting technologies;~~

~~*e)*~~ that ITU-R in its Recommendation ITU-R **BS.1514** has recommended system characteristics for digital sound broadcasts in the broadcast bands below 30 MHz;

~~*gf)*~~ that digital modulation ~~or other spectrum-efficient modulation~~ techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;

~~*hg)*~~ that digitally modulated emissions can, in general, provide more efficient coverage than amplitude-modulated transmissions by using fewer simultaneous frequencies and less power;

~~*i)* that the lifetime of a transmitter is at least twenty years;~~

~~*jh)*~~ that it is economically ~~un~~attractive, using current technology, to convert modern existing conventional DSB broadcasting systems to SSB-digital operation in accordance with considering d) above;

~~*ki)*~~ that some DSB transmitters have been used with digital modulation techniques without transmitter modifications;

~~*l)* that the lifetime of a receiver is of the order of ten years;~~

~~m/k)~~ that ITU-R is carrying out ~~urgent~~ further studies on the development of broadcasting using digitally modulated ~~emissions~~ in the bands allocated to the broadcasting service below 30 MHz_{5,1}

~~n)~~ ~~that other spectrum-efficient modulation techniques may be developed in the future,~~

resolves

1 that the early introduction of digitally modulated emissions as procedure in the Annex to this Resolution shall be used for the purpose of ensuring an orderly transition from DSB to SSB or other spectrum-efficient modulation techniques recommended by ITU-R in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service is to be encouraged;

2 that digitally modulated and SSB emissions shall comply with the characteristics specified in Appendix S11;

3 that whenever an administration replaces a DSB emission by an emission using digital or SSB modulation techniques, it shall ensure that the level of interference is not greater than that caused by the original DSB emission, and shall use RF Protection values specified in Recommendations DAB (WRC-03) and 517 (Rev. WRC-03);

~~24 that the final date for the cessation continued use of DSB emissions specified in the Annex to this Resolution shall be periodically reviewed by a competent future world radiocommunication conferences in the light of the latest available complete statistics on the capability of administrations to introduce digital systems worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers, as called for in Resolution 537 (WRC-97),~~

instructs the Director of the Radiocommunication Bureau

to compile and maintain the statistics referred to in *resolves* 24, to make these statistics available to administrations and to submit summaries thereof to a competent future world radiocommunication conferences,

invites ITU-R

to continue its studies on digital techniques in HF broadcasting ~~as a matter of urgency~~ with a view to assist in the development of this technology for future use,

invites administrations

1 to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated ~~emissions~~ ~~transmissions~~ in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service;

2 to bring to the notice of transmitter and receiver manufacturers the most recent results of relevant ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in *considerings d) and e).*

Reasons: The changes to this resolution reflect the introduction of digital and SSB emissions and the consequent need to protect DSB emissions from digital and single sideband emissions, and vice versa. The introduction of digital emissions does not substitute for single sideband emission use. The resolution has been modified so that both are considered on an equal regulatory footing. Several modifications made in the *considerings* are a consequence of digital modulation development for HF broadcasting since WRC-97.

USA/ /2
SUP

ANNEX TO RESOLUTION 517 (REV.WRC-97)

Reasons: Due to the modifications to Resolution **517** related to the introduction of digital and SSB emissions and deletion of the requirement of the transition procedures, this annex is no longer needed. This annex deals with a previous idea that all DSB would cease after 2015. The complete package with regard to this agenda item considers that this concept of cessation of one of the approved modulation methods should be considered by a future competent conference; that it is unrealistic to consider ceasing a particular type of modulation without any concern for the listener and broadcaster market 12 years after WRC-03.

USA/ /3
MOD

APPENDIX S11

System specifications for Double-Sideband (DSB), and Single-Sideband (SSB) and Digitally Modulated Emissions ~~System Specifications in the HF Broadcasting Service~~

Reasons: Updating the appendix title to reflect the proposed use.

USA/ /4
NOC

Double-sideband system (DSB)

Reasons: The current text is adequate as written.

PART B - Single-sideband system (SSB)

1 SYSTEM PARAMETERS

USA/ /5
MOD

1.1 Channel spacing

In a mixed DSB, SSB and Digital environment ~~During the transition period~~ (see Resolution **517 (Rev. WRC-03 HFBC-87)**), the channel spacing shall be 10 kHz. In the interest of spectrum conservation, ~~during the transition period,~~ it is also permissible to interleave SSB emissions midway between two adjacent DSB channels, i.e., with 5 kHz separation between carrier frequencies, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

In an all inclusive SSB environment, ~~After the end of the transition period~~ the channel spacing and carrier frequency separation shall be 5 kHz.

Reasons: Updating this text to reflect digital and SSB use and deleting text concerning the transition period. No change in the carrier reduction levels.

USA/ /6
MOD

2.6 Carrier reduction (relative to peak envelope power)

In a mixed DSB, SSB and Digital environment ~~During the transition period~~ the carrier reduction shall be 6 dB to allow SSB emissions to be received by conventional DSB receivers with envelope detection without significant deterioration of the reception quality.

In an all inclusive SSB environment ~~At the end of the transition period~~, the carrier reduction shall be 12 dB.

Reasons: Updating this text to reflect digital and SSB use and deleting text concerning the transition period. No change in the carrier reduction levels.

USA/ /7
ADD

PART C - Digital system

1 SYSTEM PARAMETERS

1.1 Channel spacing

The initial spacing for digitally modulated emissions use shall be 10 kHz. However, interleaved channels with a separation of 5 kHz may be used in accordance with the appropriate protection criteria appearing in Recommendation **DAB (WRC-03)**, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

[1.2 Channel utilisation

Channels using digitally modulated emissions may be commingled with analogue emissions in the same HFBC band provided the protection to the analogue emissions is at least as great as that which currently is in force with analogue-to-analogue protection. To accomplish this may require that the digital spectral power density (and total power) be lower by several dB than is currently used for the same emission circuit using either DSB or SSB emissions.

2 EMISSION CHARACTERISTICS

2.1 Bandwidth and centre frequency

A full digitally modulated emission will have a 10 kHz bandwidth with its centre frequency at any of the 5 kHz possibilities within the HFBC bands.

There are “simulcast” modes, which are a combination of analogue and digital emissions of the same programme in the same channel, that may use a digital emission of 5 kHz or 10 kHz bandwidth, next to either a 5 kHz or 10 kHz analogue emission. In all cases of this type, the 5 kHz interleaved raster used in HFBC shall be adhered to in placing the emission within the HFBC bands.

2.2 Frequency tolerance

To be entered after WP6E determines the values at either its March 2002 or September 2002 meeting.

2.3 Audio frequency band

Digital source coding within a 10 kHz bandwidth, taking account of the need for various levels of error avoidance, detection and correction coding emission mitigation, can range from the equivalent of monophonic FM (approximately 15 kHz) to low level speech codec performance of the order of 3 kHz. The choice of audio quality is connected to the needs of the broadcaster/listener, and includes such characteristics to consider as the propagation channel conditions expected. There is no single specification, only the upper and lower bounds noted in this paragraph.

2.4 Modulation

Quadrature amplitude modulation (QAM) with Orthogonal frequency division multiplexing (OFDM) shall be used. 64 QAM is feasible under many propagation conditions; factors of $\frac{1}{2}$, $\frac{1}{4}$ and perhaps $\frac{1}{8}$ of this are specified for use when needed.

Reasons: Part C is added to address the requirements of digital systems. Specific channelization values, audio frequency bandwidths and “modes” of digital modulation conform to ITU-R system Recommendation **BS.1514**.

USA/ 8

ADD

DRAFT RECOMMENDATION DAB (WRC-03)

RF protection ratios associated with digitally modulated emissions in the HF bands allocated exclusively to the broadcasting service

The World Radiocommunication Conference (Caracas, 2003),

considering

- a) that this Conference has resolved to encourage the introduction of digitally modulated emissions in the high frequency broadcast bands allocated exclusively to the broadcasting service;
- b) that the current use of the spectrum is based on the use of double-sideband (DSB) emissions;
- c) that RF co-channel and adjacent channel protection ratios are among the fundamental parameters when determining compatibility;
- d) that this Conference has adopted Resolution **517 (Rev. WRC-03)** relating to the introduction of digitally modulated emissions in the HF bands allocated exclusively to the broadcasting service;
- e) that Part C of Appendix **S11** contains digital system specifications that refer to this Recommendation for matters dealing with appropriate protection ratios,

recommends

- 1** that in the application of Article **S12**, the protection ratios specified in the Annex to this Recommendation be used for all those cases where digitally modulated emissions operate in the same bands as double-sideband analogue emissions.

Reasons: This resolution provides protection ratios associated with digital emissions in the same manner as that of Recommendation **517**, originally from HFBC-87, which deals with SSB and DSB only. It, along with its Annex, specifies the levels of protection required both to protect the amplitude modulation transmissions from digital modulation emissions, digital modulation emissions from other digital modulation emissions, and digital modulation emissions from amplitude modulation emissions.

USA/ /9

ADD

ANNEX TO RECOMMENDATION DAB (WRC-03)

RF protection ratio values

1. In accordance with Resolution **517 (Rev. WRC-03)** digital modulation may be used in any of the HF bands allocated exclusively to the broadcasting service. This accommodation has to be made with the appropriate amounts of protection given to both analogue and digital emissions. RF protection ratios are part of the overall regulation of these emissions. Their values appear in the table in this annex.
2. The table consists of RF protection ratios for co-channel and adjacent channel conditions. The independent variable in the table is the centre frequency separation in kHz of any pair of emissions, wanted vs. unwanted. The ratio data are in decibels.
3. The digital modulation governing these protection ratios is that which appears in summary in Part C of Appendix **S11**, as revised at this conference, and the analogue modulation is double-sideband modulation or single sideband modulation as summarized in Parts A and B, respectively, of the same Appendix.

[

Protection Ratio Table

Wanted signal	Other signal	Centre frequency separation (kHz)				
		0	5	10	15	20
DSB	Digital ¹⁾	6	3	-31	-42	-48
Digital	DSB ²⁾	8	2	-31	-38	-40
Digital	Digital ²⁾	17	12	-35	-39	-44
SSB	Digital ³⁾	-	-	-	-	-
Digital	SSB ³⁾	-	-	-	-	-

]

Notes:

¹⁾ Values relative to the DSB/DSB co-channel RF protection ratio

- 2) Values for a BER of 10^{-4}
- 3) *Values for SSB into digital and digital into SSB will be supplied from the TG6/7 meetings to be held in March 2002 and September 2002*

Reasons: This annex provides the appropriate amounts of protection given to both analogue and digital emissions and supports the text of DRAFT RECOMMENDATION **DAB(WRC-03)**.

**USA/10
MOD**

RECOMMENDATION 517 (~~HFBC-87~~REV.WRC-03)

Relative-RF protection ratio values for single-sideband (SSB) emissions in the HF bands allocated exclusively to the broadcasting service

The World ~~Administrative Radio-Radiocommunication~~ Conference for the Planning of the HF Bands ~~Allocated to the Broadcasting Service~~ ([Geneva] ~~2003~~, 1987),

considering

- a) that ~~WRC-97 the Conference has adopted~~ Article S12 as the seasonal ~~a method for the planning procedure for~~ of the HF bands allocated exclusively to the broadcasting service;
- b) that this ~~method~~ procedure is based principally on the use of double-sideband (DSB) emissions;
- c) that the RF co-channel protection ratio is one of the fundamental planning parameters;
- d) that ~~the this~~ Conference has adopted Resolution **517 (Rev. WRC-03)** relating to the ~~transition introduction of digitally modulated and from DSB to SSB emissions in the HF bands allocated exclusively to the broadcasting service and Recommendation 515 relating to the introduction of transmitters and receivers capable of both DSB and SSB modes of operation;~~
- e) that the SSB system characteristics for HF broadcasting are contained in Appendix **S11**;
- f) ~~that, however, due to their provisional nature, the values of the relative RF protection ratio to be applied for all relevant combinations of wanted and unwanted DSB and SSB emissions have not been included in the Appendix mentioned in considering e);~~
- g) that ~~preliminary~~ studies have shown that SSB emissions may require a lower RF co-channel protection ratio for the same reception quality;
- h) ~~Resolution 514 (HFBC-87)* relating to the procedure to be applied by the Radio Regulations Board and the Bureau in the revision of relevant parts of their Technical Standards used for HF broadcasting;~~

recommends

that, ~~subject to the procedure to be applied by the Radio Regulations Board and the Bureau in the revision of relevant parts of their Technical Standards used for HF broadcasting given in~~

* ~~This Resolution was abrogated by WRC-97.~~

~~Resolution 514 (HFBC-87)~~^{*}, the values of ~~relative~~ RF protection ratio given in the Annex to this Recommendation be used by the Bureau in its application of Article S12 Technical Standards relating to SSB and DSB emissions in the HF bands allocated exclusively to the broadcasting service,

~~invites the ITU-R~~

~~to continue to study the values of relative RF protection ratio for the different cases and frequency separations covered in the Annex to this Recommendation,~~

~~and recommends administrations~~

~~to participate actively in these studies.~~

Reasons: This recommendation has been modified to reflect the introduction of digital emissions. No substantive changes were made in the protection ration values with SSB vs. DSB amplitude modulation.

USA/ /11

MOD

ANNEX TO RECOMMENDATION 517 (~~HFBC-87~~Rev.WRC-03)

~~Relative~~ RF protection ratio values

1 The values of ~~relative~~ RF protection ratio given in the table should be used whenever SSB emissions in conformity with the specification in Appendix S11 are involved in the use of the HF bands allocated exclusively to the broadcasting service.

~~2 The values given refer to the case of co-channel DSB wanted and unwanted signals for the same reception quality.~~

~~32~~ For the reception of DSB and SSB (6 dB carrier reduction relative to peak envelope power) wanted signals, a conventional DSB receiver with envelope detection designed for a channel spacing of 10 kHz is assumed.

~~43~~ For the reception of an SSB wanted signal (12 dB carrier reduction relative to peak envelope power), the reference receiver as specified in Appendix S11, Part B, Section 3, is assumed.

~~54~~ SSB signals with 6 dB carrier reduction relative to peak envelope power assume equivalent sideband power as specified in Appendix S11, Part B, § 1.2.

~~65~~ The figures for case 2 in the following table relate to a situation where the centre frequency of the intermediate frequency pass-band of the DSB receiver is tuned to the carrier frequency of the wanted SSB signal. If this is not the case, the value for a difference of +5 kHz may increase to -1 dB.]

Relative RF protection ratio values with reference to the co-channel RF protection ratio for DSB wanted and unwanted signals (dB)¹ for use in the HF bands allocated exclusively to the broadcasting service

	Wanted signal	Unwanted signal	Carrier frequency separation $f_{\text{unwanted}} - f_{\text{wanted}}, \Delta f$ (kHz)								
			-20	-15	-10	-5	0	+5	+10	+15	+20
1	DSB	SSB (6 dB carrier reduction relative to p.e.p.)	-51	-46	-32	+1	3	-2	-32	-46	-51
2	SSB (6 dB carrier reduction relative to p.e.p.)	DSB	-54	-49	-35	-3	0	-3	-35	-49	-54
3	SSB (6 dB carrier reduction relative to p.e.p.)	SSB (6 dB carrier reduction relative to p.e.p.)	-51	-46	-32	+1	0	-2	-32	-46	-51
4	SSB (12 dB carrier reduction relative to p.e.p.)	SSB (12 dB carrier reduction relative to p.e.p.)	-57	-57	-57	-45	0	-20	-47	-52	-57

¹ Frequency separation Δf less than -20 kHz, as well as Δf greater than 20 kHz, need not be considered.

Reasons: Minor text changes were made to update the annex from **HFBC-87**. No changes were made in the DSB vs. SSB table of protection ratios.

USA/ /12
MOD

S5.134 ~~The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by are allocated to the broadcasting service on a primary basis as from 1 April 2007 is limited to single sideband emissions with the characteristics specified in Appendix S11 or to any other spectrum efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.~~

Reasons: The proposed modification provides a simple unambiguous regulatory environment for the use of the WARC-92 extension bands both before and after the envisaged implementation date of 1 April 2007. Before the 01/04/07 date, there is no change: in other words, the bands are not allocated to HFBC. After that date, broadcasters can choose any modulation means that has ITU-R approval, such as the digital modulation described in ITU-R Recommendation **BS.1514** and the SSB and DSB amplitude modulations noted in Article **S11**.

USA/ /13
SUP

RESOLUTION 537 (WRC-97)

Reasons: The survey mentioned in the resolution on transmitter and receiver statistics related to SSB has been completed, and submitted by the BR for WRC-2000, as requested from WRC-97. Therefore, there is no need to carry forward this resolution. The associated Recommendation **515 (Rev.WRC-97)** is also proposed for suppression as detailed below.

USA/ /14
SUP

RECOMMENDATION 515 (Rev.WRC-97)

Reasons: With the adoption of this Recommendation **BS.1514** and the fact that IEC has been informed of this development, Recommendation **515 (Rev.WRC-97)** can be suppressed.

USA/ /15
SUP

RECOMMENDATION 519 (WARC-92)

Reasons: This Recommendation, from WARC-92, considers the possibility of advancing the date of cessation of DSB. In the light of broadcasting needs in HF, this is totally unrealistic. Thus, there is concern within many Administrations, expressed on many occasions at WRC-97, that the introduction of SSB into HF Broadcasting (and now digital modulation) should not restrict the ability of administrations to continue with their existing DSB transmissions for the foreseeable future and that at this point in time it is inappropriate to specify a cessation of DSB in favour of SSB in the year 2015. It is also evident from information presented at WRC-2000 by the Director that the interest in SSB within HF Broadcasting is virtually non-existent. This Recommendation should therefore be suppressed.

USA/ /16
MOD

ARTICLE S23.12

~~Double side band and single side band~~ Transmitting stations operating in the HF bands allocated exclusively to the Broadcasting Service shall meet the system specifications contained in Appendix **S11**.

Reasons: A consequential change that reflects the change in S11 that has added digital modulation to the acceptable modulation methods.

II. Draft Proposals Approved by the National Telecommunications and Information Administration (NTIA)

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Included in Doc. WAC/099(04.04.02)

Agenda Item 1.12c: to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730 (WRC-2000)**;

Background Information: Resolution **723 (Rev. WRC-2000)** *resolves 4*, recommends that WRC-03 consider a review of existing allocations to space science services near 15 GHz and 26GHz, with a view to accommodating wideband space-to-Earth space research applications. This *resolves* is in response to a need for allocations to support planned high data rate space research missions requiring bandwidths up to 400 MHz. Satellites for these missions will carry telescopes and/or other passive instruments to measure phenomenon such as the Earth's magnetosphere and solar flares. These missions will be limited in number with an estimated three to five satellites per year worldwide, and will generally be in an equatorial orbit with some at geostationary altitudes and others at the L1 or L2 Sun/Earth equilibrium libration points that are approximately 1.9 M km from Earth.

An ITU-R study has shown the feasibility of using the band 25.5-27.0 GHz to satisfy the requirements described above.¹ The band is currently allocated to the fixed, mobile, inter-satellite and Earth exploration-satellite services on a primary basis. The use of the allocations is further constrained by RR footnotes: **S5.536** sets conditions on the use of the band by stations in the inter-satellite service (ISS); **S5.536A** limits the protection afforded EESS earth stations from the emissions of stations in the fixed and mobile services; and, **S5.536B** further limits the protection and status of EESS earth stations in a number of countries.

Proposal:

25.5-27 GHz			
Allocation to Services			
	Region 1	Region 2	Region 3
USA/ /1 MOD	25.5-27	EARTH EXPLORATION-SATELLITE (space-to Earth) S5.536A -S5.536B FIXED INTER-SATELLITE S5.536 MOBILE <u>SPACE RESEARCH (space-to-Earth)</u> Standard frequency and time signal-satellite (Earth-to-space) <u>MOD S5.536A</u>	

Reasons: To add a primary space research service (space-to-Earth) allocation to the Table of Allocations and to show that the footnote **S5.536A** will apply to the space research service as well as the Earth exploration-satellite service.

¹ This proposal only addresses the 26 GHz element of Agenda Item 1.12c. A separate proposal will address the 15 GHz element of the agenda item.

**USA/ /2
MOD**

S5.536A Administrations installing Earth exploration-satellite service or space research service earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the Earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

Reasons: This change amends RR footnote **S5.536A** to include SRS earth stations and to give them the same status as Earth exploration-satellite service earth stations.

Table S21-4

USA/ /3 MOD		Service*	Limit in dB(W/m2) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
			0°-5°	5°-25°	25°-90°	
	<u>25.5-27.0 GHz</u>	<u>Space Research (space-to-Earth)</u>	<u>-115</u>	<u>-115 + ($\delta - 5$)/2</u>	<u>-105</u>	<u>1 MHz</u>

Reasons: These changes limit the emissions of the space research service in order to protect the fixed and mobile services from harmful interference.

APPENDIX S7, TABLE 8d

Parameters required for the determination of coordination distance for a receiving earth station

**USA/ /4
MOD**

Receiving space radiocommunication service designation		space research (4)	space research (5)
Frequency band (GHz)		<u>25.5-27.0</u>	<u>25.5-27.0</u>
Transmitting terrestrial service designations		<u>Fixed, mobile</u>	<u>Fixed, mobile</u>
Method to be used		<u>§ 2.2</u>	<u>§ 2.1</u>
Modulation at earth station (1)		<u>N</u>	<u>N</u>
Earth station interference parameters and criteria	p_0 (%)	<u>0.1</u>	<u>0.1</u>
	n	<u>2</u>	<u>2</u>
	p (%)	<u>0.05</u>	<u>0.05</u>
	N_L (dB)	<u>0</u>	<u>0</u>
	M_s (dB)	<u>6</u>	<u>6</u>
Terrestrial station parameters	W (dB)	<u>0</u>	<u>0</u>
	E (dBW) in B (2)	A <u>±</u> N <u>42</u>	A <u>±</u> N <u>42</u>
	P_t (dBW) in B	A <u>±</u> N <u>-3</u>	A <u>±</u> N <u>-3</u>
	G_x (dBi)	<u>45</u>	<u>45</u>
	Reference bandwidth B (Hz)	<u>10⁶</u>	<u>10⁶</u>
Permissible interference power		$P_r(p)$ (dBW) in B <u>-150</u>	$P_r(p)$ (dBW) in B <u>-150</u>

USA/ /5
NOC

(Notes to Table 8d)

- (1) A: analogue modulation; N: digital modulation.
- (2) *E* is defined as the equivalent isotropically radiated power of the interfering terrestrial station in the reference bandwidth.
- (3) Non-geostationary mobile-satellite service feeder links.
- (4) Non-geostationary-satellite systems.
- (5) Geostationary-satellite systems.
- (6) Non-geostationary fixed-satellite systems.

Reasons: Provides the characteristics in Table 8d of Appendix **S7** of receiving earth stations in the space research service to be used in determining the coordination contour with respect to transmitting stations in the fixed and mobile services.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Included in Doc. WAC/099(04.04.02)

Agenda Item 1.14: to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions **207 (Rev.WRC-2000)** and **350(WRC-2000)**, and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology, also taking into account Resolution **347 (WRC-97)**;

Background Information: In an ongoing effort to reduce interference to HF distress and safety frequencies used in the GMDSS, WRC-2000 determined that after 31 December 2003, general calling should not be permitted on channels used for distress and safety traffic. The radio regulations now permit routine voice calling on the two GMDSS duplex distress and safety traffic channels in the 12 and 16 MHz band. WRC-2000 actions removed the calling function on these two channels. It also changed these duplex channels to simplex channels, allocating one of the simplex channels for routine calling via radiotelephone and the other as dedicated for distress and safety communications. These changes are scheduled to take effect 31 December 2003. This change will result in a financial and personnel impact to maritime SAR authorities that maintains listening watch in these bands, and receives occasional routine radiotelephone calls in addition to distress and safety calls. Removal of the ability of shore stations that have search and rescue responsibilities to receive and make routine calls on these frequencies will result in the receiving of distress and safety calls on a working channel not designated for distress and safety purposes. This has caused some confusion to mariners wishing to send distress and safety calls.

A second related issue involves a need for more effective methods for ships and coast stations to call ships using DSC for routine communications. ITU Radio Regulations effectively prohibit ships and coast stations from making routine calls to other ships using DSC, and other alternatives do not exist. Channels are available for ships making routine calls to coast stations, and these channels should continue to be used. But ships do not guard these routine calling channels, and so cannot accept routine calls from coast stations. Simplex HF DSC channels allowing routine calls from other ships do not exist, and experience has shown that the number of such calls would be small, and should not interfere with the distress and safety uses of this channel.

Proposal:

USA/ / 1

MOD

S52.221A Calling on the carrier frequencies 12 290 kHz and 16 420 kHz ~~shall cease as soon as possible and no later than 31 December 2003~~ is permitted only to and from rescue coordination centres (see No. S30.6.1). The alternative carrier frequencies 12359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

Reasons: The addition in this footnote permits calling to and from stations that have search and rescue responsibilities, i.e., rescue coordination centres. Because of the very limited number of rescue coordination centres that are, or plan to be, operating in these bands, the additional traffic and potential for interfering with distress and safety traffic is very low. Additionally, this allows a vessel in a distress situation to communicate on these channels rather than making a distress call on a working channel; hence, de facto changing the working channel into the distress and safety channel. Monitoring of these two frequencies at the US Coast Guard Communications Master Stations Atlantic have shown very little traffic on these channels.

APPENDIX S15

TABLE S15-1

Legend:

USA/ / 2

MOD

DSC These frequencies are used exclusively for distress and safety calls using digital selective calling in accordance with No. **S32.5** (see Nos. **S32.9**, **S33.11** and **S33.34**). Exceptionally, however these frequencies may also be used for ship-to-ship and shore-to-ship routine calling if no other means are available and if no traffic is present on the channel (see No. **S31.4**).

Reasons: This will facilitate communications to and from ships that are outside coverage of VHF radiotelephone frequencies, where no other means of DSC calling exist. This change includes the requirement to ensure no communications is present before making a routine call. It allows DSC-equipped radios to meet the recommendations of IMO that GMDSS equipment not be reserved for emergency use only, as described in IMO COMSAR Circ. 17.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Included in Doc. WAC/101(04.04.02)

Agenda Item 1.31: to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions 226 (WRC-2000) and 227 (WRC-2000);

Background Information: WRC-2000 considered proposals for worldwide allocation of the band 1 683-1 690 MHz to the mobile-satellite service (MSS) (Earth-to-space) in response to Resolution **213 (WRC-95)**. The frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis. However, the 1 683-1 690 MHz portion is used mainly by the meteorological-satellite (MetSat) and meteorological aids (MetAids) services. While there are only a limited number of MetSat earth stations operating in this band in Region 1, there are a large number of MetSat earth stations operating in Regions 2 and 3, and the locations of many of these stations are not identified. Sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible only if appropriate separation distances are maintained.

Sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed. Recommendation ITU-R **SA.1158-2** indicates that additional studies are required in order to determine the criteria for coordination between MSS and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3.

Other spectrum identified in Resolution **213** included 1 690-1 710 MHz. However, the ITU-R has concluded that co-channel sharing between MSS and MetAids is not feasible and that co-frequency sharing between MetAids and MetSat services is not feasible. Therefore, the World Meteorological Organization (WMO) has identified future spectrum requirements for MetAids operations as limited to the 1 675-1 683 MHz portion of the 1 675-1 700 MHz band, but some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations. Resolution 227 noted that, due to incompatibility between MSS and MetSats/MetAids, no further study is required on sharing in the 1 675-1 683 MHz and the 1 690-1 710 MHz bands.

The existing Region 2 allocation includes the provision that MSS operation should not constrain current and future development of the MetSat service, as specified in No. **5.377**. No MSS services have been implemented under the Region 2 allocation in this band.

Proposal:

**USA/ /1
MOD**

1 675-1 710 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE SATELLITE (Earth-to-space) 5.341 5.377	1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341
1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL- SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE SATELLITE (Earth-to-space) 5.289 5.341 5.377 5.381	1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL- SATELLITE (space-to-Earth) 5.289 5.341 5.381
1 700-1 710 FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	1 700-1 710 FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE SATELLITE (Earth-to-space) 5.289 5.341 5.377	1 700-1 710 FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384

Reasons: There are no MSS systems operating in this band, and none are currently planned, due to the incompatibility of MSS and the Metatds and MetSat services.

**USA/ /2
SUP**

5.377

Reasons: Consequential to the deletion of the allocation for MSS.

-FCC-